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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,583	10/18/2000	Neil Maxwell Mclachlan	00-704-US	5062

7590 09/23/2004  
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EXAMINER

REIS, TRAVIS M

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/691,583

Applicant(s)

MCLACHLAN ET AL.

Examiner

Travis M Reis

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 6/21/4 & telephonic interview on 9/20/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-13 and 15-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 and 23 is/are allowed.
- 6) ☒ Claim(s) 2-13, 15-21, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Features critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See In re Mayhew, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The independent claims lack essential features since, according to the pages 7-8 of the specification and the remarks stated in pages 7-8 of the amendment, filed 1/28/03, at least one of the features mentioned is required to provide the harmonic frequencies. Thus, applicant should amend the independent claims to state the at least one essential/critical structural feature stated in the specification and amendment which provide the harmonic frequencies.

In response to Applicant's arguments regarding the critical or essential features: these have been fully considered but they are not persuasive because the term "bell" does not inherently disclose any structural features which will provide harmonic frequencies.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 2-13, 15-21, 24, & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art stated in pages 1 to 5 of the specification [hereinafter Prior Art] in view of the ReShape computer program user's manual, [hereafter Reshape].

With reference to claim 24: the Prior Art (specifically page 3, lines 26-30) teach that a bell with the greatest clarity of sound is an harmonic bell, i.e. a bell having at least the first several modal frequencies in the ratios 1, 2, 3, 4, etc.

The Prior Art also teaches that a bell can be designed via the use of a finite element method in conjunction with an optimization algorithm (pages 4-5).

The Prior Art does not provide a particular structure of the harmonic bell.

Reshape teaches a commercially well-known finite element program used to optimize the design of any desired structure. Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to use the finite element program Reshape in conjunction with an optimization algorithm as taught by the Prior Art in order to design a harmonic bell since the Prior Art has already suggested that harmonic bells have the greatest clarity of sound.

With reference to claims, 2, 3, 13 15-17, 19, & 25, the Prior Art (specifically page 5 lines 12-20) teaches that a single feature, i.e. initial bell shape or the wall thickness of a bell's shape can be used as an initial shape in an optimization procedure in an attempt to find the optimal shape of a bell.

With reference to claim 20, the Prior Art (specifically pages 4, lines 23-32 through page 5 lines 1-20), teaches the optimization procedure comprises the steps of setting the initial bell shape, selecting one of the first three frequencies to be tuned as a current objective, selecting a value to modify the bell shape off of successively until the final objective of desired frequencies is met.

With reference to claims 4-12, & 18, the Prior Art teaches the bell has a top portion, a side portion and a mouth, the side portion extending from the top portion to the mouth, the outer surface of the side portion being generally in the form of a truncated circular cone and generally convex, the inner surface of the side portion being generally in the form of a truncated circular cone, and generally concave, the whole bellshape being generally tapered. With reference to claim 21, this is a "product by process" claim since the claim language is directed to the steps required to form the bell. Therefore, these steps have been given no patentable weight since it has been held that 1) the determination of patentability in "product by process" claims is based on the product itself, even though such claims are limited and defined by the process, and 2) the product in a "product by process" claim is unpatentable if it is the same as, or obvious from a product of the prior art, even if the prior art product was made by a different process. In re Thorpe et al., 227 USPQ 964 (Fed. Cir. 1985).

### ***Response to Arguments***

5. The Declaration filed on 6/21/04 by Dr. Thomas Rossing regarding the applicant's invention is found to be persuasive; however the feature stated in the declaration, i.e. "choosing a starting geometry in which the lower frequency modes to be tuned by shape optimization are purely circumferential modes" is not in the claims.

6. The examiner suggests the following language to make the claims allowable:

In claim 13, line 1, "having a plurality of modal frequencies, first at least four frequencies being" should be ---as claimed in claim 25,---.

In claim 15, line 6, the following text should be inserted ---comprising choosing a starting geometry in which the lower frequency modes to be tuned by shape optimization are purely circumferential modes---.

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In claim 24, line 4, after "sequence", the following text should be inserted --- the means for producing the third frequency comprising choosing a starting geometry in which the lower frequency modes to be tuned by shape optimization are purely circumferential modes---.

In claim 25, line 8, after "sequence", the following text should be inserted --- the means comprising choosing a starting geometry in which the lower frequency modes to be tuned by shape optimization are purely circumferential modes---.

Appropriate correction is required.

7. Examiner discussed the above changes to the claim language in a telephone interview with Mr. Dougherty on 9/20/4, but no agreement was reached.

***Allowable Subject Matter***

8. The following is an examiner's statement of reasons for allowance:

With reference to claim 22, the prior art of record does not disclose or clearly suggest an axisymmetric bell having a top portion, a side portion and a mouth, the side portion extending from the top portion to the mouth, meridional cross-section of the side portion being substantially geometrically similar to a cross section having an outer line formed by fitting an arc of a circle to three points having rectangular coordinates  $x$ ,  $y$ , of the nodes set out in table 3, in combination with the remaining limitations in the claims.

With reference to claim 23, the prior art of record does not disclose or clearly suggest an axisymmetric bell having a top portion, a side portion and a mouth, the side portion extending from the top portion to the mouth, meridional cross-section of the side portion being substantially geometrically similar to a cross section having an outer line formed by fitting an arc of a circle to two points having rectangular coordinates  $x$ ,  $y$ , of the nodes set out in table 6, in combination with the remaining limitations in the claims.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis M Reis whose telephone number is (571) 272-2249. The examiner can normally be reached on 8--5 M--F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571) 272-2245. The fax phone number for

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the organization where this application or proceeding is assigned is (703) 872-9306 for all communications.



Travis M Reis  
Examiner  
Art Unit 2859

Diego Gutierrez  
Supervisory Patent Examiner  
Technology Center 2800

tmr  
September 20, 2004